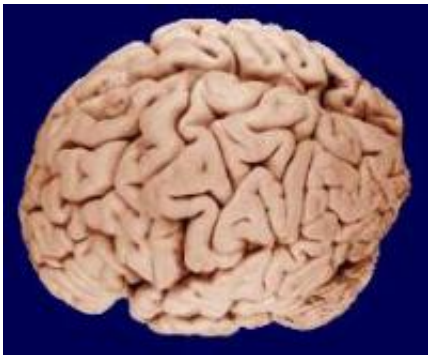


The Queen and I: How autistic brain distinguishes oneself from others

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Credit: University of Wisconsin and Michigan State Comparative Mammalian Brain Collections and the National Museum of Health and Medicine

Scientists at the University of Cambridge have discovered that the brains of individuals with autism are less active when engaged in self-reflective thought. The study published today in the journal *Brain* provides new evidence for the neural correlates of self-awareness and a new window into understanding social difficulties in autism spectrum conditions.

In the new study, Michael Lombardo, Professor Simon Baron-Cohen and colleagues from the [Autism](#) Research Centre at the University of Cambridge used [functional magnetic resonance](#) (fMRI) imaging to measure [brain activity](#) of 66 male volunteers, half of whom have a diagnosis of an autism spectrum condition.

Lombardo asked the volunteers to make judgments either about their own thoughts, opinions, preferences, or [physical characteristics](#), or about someone else's, in this case the Queen. By scanning the volunteers' brains as they responded to these questions, the researchers were able to visualise differences in brain activity between those with and without autism.

They were particularly interested in part of the brain called the ventromedial prefrontal cortex (vMPFC), known to be active when people think about themselves. "This area is like a self-relevance detector, since it typically responds most to information that is self-relevant," Lombardo says.

Lombardo found this area of the brain was indeed more active when typical volunteers were asked questions about themselves compared to when they were thinking about the Queen. However, in autism this brain region responded equally, irrespective of whether they were thinking about themselves or the Queen.

According to Lombardo: "This new study shows that within the autistic brain, regions that typically prefer self-relevant information make no distinction between thinking about the self or another person. This is strong evidence that in the autistic brain, processing information about the self is atypical."

Autism has long been considered a condition of extreme egocentrism. The word 'autism' comes from the Greek word 'autos', meaning 'self'. However, recent research shows that individuals with autism are also impaired in thinking about themselves. Lombardo's study helps explain this paradox: "On the surface these two observations seem like opposites, but they may converge on a common neurobiological explanation that the autistic brain responds less to information that is self-relevant," Lombardo says.

The new evidence about the autistic brain will help researchers better understand the social difficulties of individuals with autism.

Lombardo added: "Navigating social interactions with others requires keeping track of the relationship between oneself and others. In some social situations it is important to notice that 'I am similar to you', while in other situations it might be important to notice that 'I am different to you'. The atypical way the autistic brain treats self-relevant information as equivalent to information about others could derail a child's social development, particularly in understanding how they relate to the social world around them."

More information: Michael V. Lombardo et al, 'Atypical neural self-representation in autism', DOI 10.1093/brain/AWP306 , is published in *Brain* on 14 December 2009.

Source: University of Cambridge ([news](#) : [web](#))

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